



SPACE HEATER SMALL (SHS)

1 Mar 01

OBJECTIVES



- Upon task certification you should be able to operate and maintain the Space Heater Small in a safe manner.
- You are required to pass a task performance evaluation IAW with checklist criteria.
- Document this training on AF Form 797 and AF Form 55.

OVERVIEW



- **Introduction**
- **General Safety**
- **Initial Training Requirements**
- **SHS Set-up and Operation**
- **Manufacturers Warnings**

INTRODUCTION



- The Mini-Heater, SHS, is designed for the individual airman and produces 12,000 BTU.
- It comes self-contained and includes its own fuel supply and own stack.
- It utilizes the fail-safe, non-flooding vaporizing burner and is controlled by adjusting the height of its carburetor.

INTRODUCTION



- **The Mini-Heater is supplied with the following:**
 - **Connections for 5 gallon Jerry can**
 - **5 foot length overflow hose and fittings**
 - **Stack Adapter Plate**
 - **Instruction Plate**
 - **Instruction Manual**

SAFETY RELEASE



The following safety assessment report for the SHS was issued by the US Army Cold Regions Test Activity, Apr 96:

- **Personnel must be trained in the use of the SHS**
- **Training must include a review of all warnings and precautions**
- **The heaters must be attended to at all times when in operation**
- **JP8, Diesel, or Kerosene are the only fuels which may be used in the heaters**
 - **Note: The use of JP8 is highly recommended. Diesel produces heavy black smoke and back flashes.**

SAFETY RELEASE (Cont.)



- The heaters **MUST** be allowed to cool prior to refueling
- Refueling should only be conducted outside the enclosed space
- Combustible material must be removed from the immediate vicinity of the heaters chimney to avoid fires

Safety Issues



- **Commanders will:**
 - **Develop and implement a field fire alarm system. A fire extinguisher, shovel, and ax will be available at selected fire points**
 - **Inform airmen of the location of the fire points**
 - **Select and train personnel in operator maintenance of fuels systems**
 - **Ensure airmen receive enough training to operate the SHS**
 - **Instruct airmen not to place sealed water cans on heaters**

Safety Issues (Cont.)



- **Commanders will:**
 - **Instruct airmen not to place wet clothing within 24" of SHS**
 - **Designate a fire guard for each tent.**
 - **Appoint a roving guard to conduct hourly inspections when several tents are erected in the same area**
- **Tent stoves will be placed on a metal-based drip pan**
- **All stove pipe sections will be used at all times**
- **Two (Three) guy wires will be used to secure exhaust pipe**

Safety Issues (Cont.)



- Only 5-gallon cans will be used as fuel supply containers
 - Fuel supplies will be located at least 5 feet from the outside wall of the tent
 - Fuel containers will be diked to prevent fuel from spreading to space heaters
 - The fuel can, fuel line connection, and carburetor will be checked for leaks after changing fuel cans.
 - The SHS will be turned off and allowed to cool for at least 30 minutes before refueling or relighting
 - Fuel systems (including fuel-tank lines and connections of the SHS) will be checked daily for leaks and malfunctions

Safety Issues (Cont.)



- Heating equipment will not be locally modified
- Combustible and flammable materials will be kept at least 50 feet from space heaters to prevent accidental ignition or explosion
- Ammunition, combustible or corrosive materials, explosives, pyrotechnics, and simulators will not be stored in tents with stoves or other heating sources
- The SHS will be fueled, used, and maintained according to manufacturers instructions

Initial SHS Training



- **View the manufacturers video tape if available**
- **Use the SHS instructions manual when operating the heater**

SHS Set-up and Operation



- See SHS manual for detailed instructions
- Always open the air vent on top of the fuel tank even when using auxiliary fuel source
- Adjust the fuel regulating valve to “ON” and wait for 2 minutes
- Open the lid of the heater. Using the primer bulb, draw one full squeeze of fuel from your source and squirt it evenly onto the bottom of the burner
- Light a small piece of fuel soaked tissue paper and drop it in the lid opening to the bottom of the burner. Use the primer bulb to ensure the paper falls to the bottom of the burner

SHS Set-up and Operation (Cont.)



- Close the lid and wait for 5-10 minutes, then adjust the regulating float valve to obtain the desired heat output
- If the burner is smoking, lower the setting for the fuel regulating valve
- To shut down the burner, turn shutoff valve to “OFF”
- Wait for the heater to completely cool before disassembling or performing maintenance

WARNING!!!



EXPLOSION HAZARD

**ALWAYS KEEP THE AIR VENT OPEN
ON THE FILLER CAP DURING ALL
HEATING OPERATIONS**

WARNING!!!



EXPLOSION HAZARD

**WHEN USING AN AUXILIARY FUEL
SOURCE, ALWAYS DRAIN THE FUEL
FROM THE INTERNAL FUEL TANK
AND OPEN THE AIR VENT**

WARNING!!!



EXPLOSION HAZARD

**FUEL TANK MUST BE DRAINED PRIOR
TO STORAGE OR TRANSPORT**

WARNING!!!



EXPLOSION HAZARD

**TURN HEATER OFF AND ALLOW TO
COOL PRIOR TO REFUELING**

WARNING!!!



FIRE OR EXPLOSION HAZARD

- **DO NOT USE UNAUTHORIZED FUELS! USE OF UNAUTHORIZED FUEL MAY RESULT IN A FIRE OR EXPLOSION!**
- **TENT EXHAUST OPENING CLOSURE FLAP MUST BE ROLLED AND TIED SECURELY**
- **TENT MAY CATCH FIRE IF HOT STACK ASSEMBLY CONTACTS FLAP**

WARNING!!!



FIRE OR EXPLOSION HAZARD

- **POORLY FITTED STACK SECTIONS MAY ALLOW HOT STACK TO FALL ON TENT AND START A FIRE, OR DEADLY CARBON MONOXIDE TO LEAK INTO TENT**
- **ENSURE SECTIONS SEAT TOGETHER FULLY**

WARNING!!!



FIRE OR EXPLOSION HAZARD

- **HEAT OR SPARKS FROM STACK ASSEMBLY COULD IGNITE EXTERNAL FUEL SUPPLY**
- **SET UP EXTERNAL FUEL SUPPLY ON A CLEAR SITE 7 FEET FROM TENT AND AWAY FROM FLAME SOURCES**



WARNING!!!

FIRE OR EXPLOSION HAZARD

- **FOR SAFE OPERATION, BE SURE TO ALLOW AT LEAST 2 FEET OF SPACE BETWEEN THE HEATER AND THE TENT WALL**
- **NEVER RELIGHT AN EXTINGUISHED FLAME WHILE THE HEATER IS HOT**
- **BE SURE TO ALLOW THE HEATER TO COOL COMPLETELY BEFORE ATTEMPTING TO RELIGHT**

WARNING!!!

FIRE OR EXPLOSION HAZARD



- **DO NOT ATTEMPT TO REPLENISH THE FUEL SUPPLY WHILE THE HEATER IS IN OPERATION**
- **BE CERTAIN THERE IS NO OPEN FLAME IN THE VICINITY OF THE LIQUID FUEL**



WARNING!!!

EXPLOSION POTENTIAL - DO NOT USE **UNAUTHORIZED FUELS**

- **GASOLINE, JP-4, USED MOTOR OIL, SOLVENTS, OR OTHER UNAUTHORIZED FUELS SHOULD not BE USED WITH THE SHS UNDER ANY CIRCUMSTANCES**
- **ONLY APPROVED LIQUID AND SOLID FUELS MAY BE USED**
- **USING UNAUTHORIZED FUELS IN THE SHS WILL CREATE A FIRE DANGER AND POTENTIAL FOR EXPLOSION**

WARNING!!!

FREEZE HAZARD



- **SEVERE INJURY MAY OCCUR TO PERSONNEL HANDLING METAL PARTS WITHOUT PROTECTIVE GLOVES WHEN TEMPERATURES ARE BELOW FREEZING**
- **SKIN MAY FREEZE UPON CONTACT AND TEAR FROM THE FLESH**

WARNING!!!

FREEZE HAZARD



- **DO NOT ALLOW FUEL TO COME IN CONTACT WITH BARE SKIN**
- **EVEN THOUGH FUEL DOES NOT FREEZE, IT IS EXTREMELY COLD AND WILL BURN EXPOSED SKIN ON CONTACT**
- **WEAR PROTECTIVE GLOVES WHENEVER HANDLING OR WORKING WITH LIQUID FUEL**



WARNING!!!

CARBON MONOXIDE

- **DURING OPERATION, THE SHS PRODUCES HARMFUL CARBON MONOXIDE (CO) AND OTHER GASSES**
- **CARBON MONOXIDE IS A COLORLESS, ODORLESS, AND TASTELESS GAS**
- **MILD CASES OF CARBON MONOXIDE POISONING CAN CAUSE SYMPTOMS SUCH AS NAUSEA, DIZZINESS OR HEADACHES.**



WARNING!!!

CARBON MONOXIDE

- **SEVERE CASES OF CARBON MONOXIDE POISONING CAN RESULT IN BRAIN DAMAGE, HEART DAMAGE, OR DEATH**
- **REMEMBER THAT ALTHOUGH CO HAS NO TELLTALE ODOR, IT MAY MIX WITH OTHER ODORS WHICH MASK ITS PRESENCE, THEREFORE, CO CAN BE PRESENT WITHIN A MIX OF SEEMINGLY HARMLESS ODORS**



WARNING!!!

CARBON MONOXIDE

- **TO PREVENT CO POISONING, ENSURE THAT THE SHS EXHAUST STACK SECTIONS FIT TOGETHER SNUGLY AND THAT THE EXHAUST GASES ARE PROPERLY VENTED THROUGH THE ROOF OF THE SHELTER**
- **THE BEST WAY TO PREVENT CO POISONING IS TO KEEP THE SHS IN GOOD WORKING ORDER**
- **ENSURE THAT ALL POSSIBLE SOURCES OF CO LEAKAGE HAVE BEEN REPAIRED AND THAT THE OPERATING SPACE IS WELL VENTILATED**

WARNING!!!

HOT SURFACES



- **DO NOT ATTEMPT TO HANDLE OR PERFORM SERVICES ON A SHS THAT HAS BEEN RECENTLY IN OPERATION**
- **LET THE SPACE HEATER COOL DOWN BEFORE PERFORMING THESE PROCEDURES TO AVOID THE POSSIBILITY OF SERIOUS BURNS**

WARNING!!!

CUT HAZARD



- **SOME METAL COMPONENTS OF THE SHS MAY HAVE SHARP EDGES**
- **BE CAREFUL WHEN HANDLING AND ASSEMBLING THE SHS TO AVOID CUTS**

SUMMARY



- **Introduction**
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QUESTIONS???